

APPROVED	O.G. FIG.	
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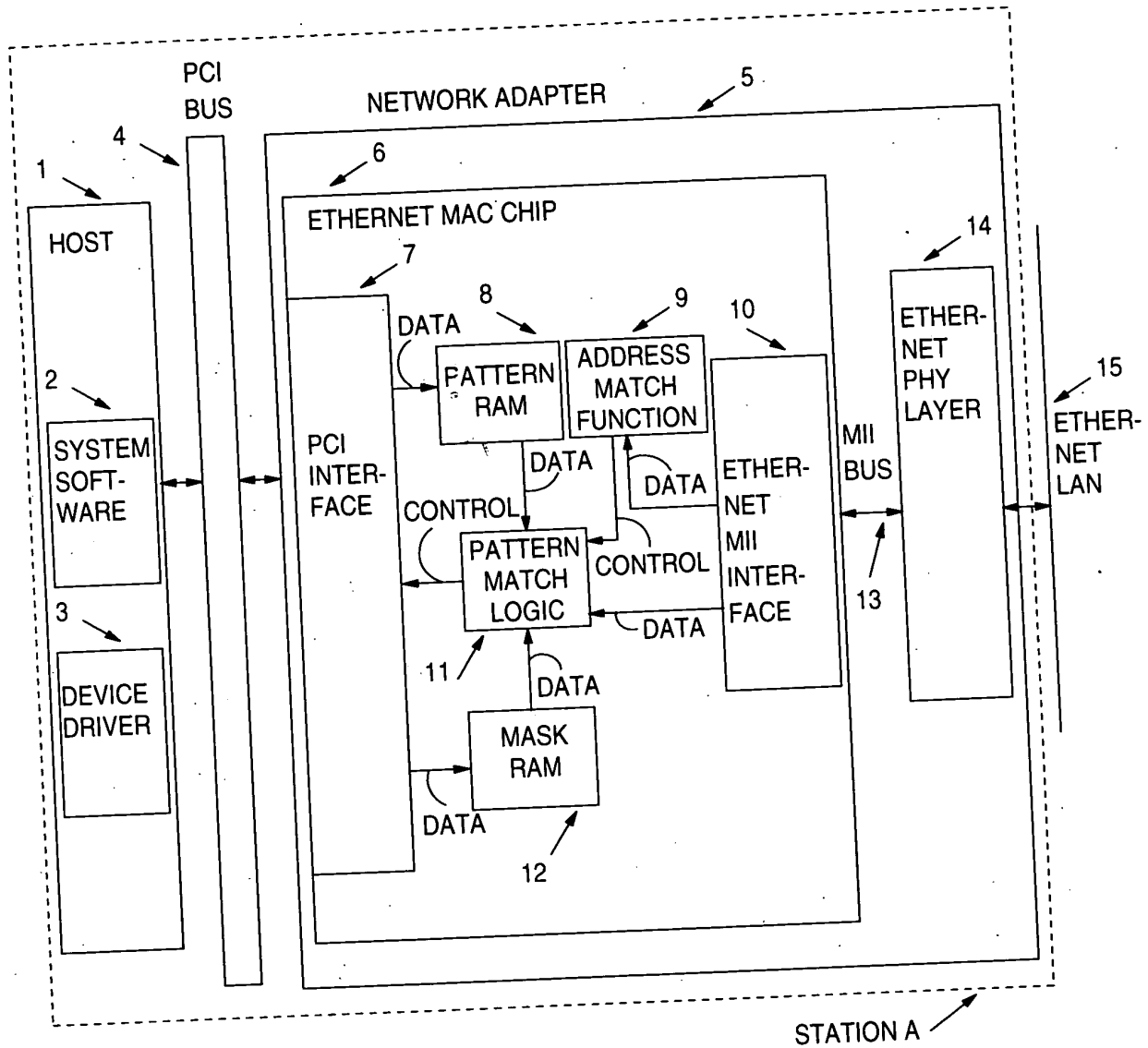


FIG. 1

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DA	SA	LENGTH/ TYPE	DATA	PADDING (IF NEEDED)	CRC
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DA - DESTINATION ADDRESS (6 BYTES)

SA - SOURCE ADDRESS (6 BYTES)

LENGTH/TYPER - LENGTH OF DATA FIELD (IEEE 802.3)/TYPE DEFINITION (ETHERNET)  
(2 BYTES)

DATA - LLC DATA (INCLUDING PADDING, IF NEEDED, IN SHORT LLC FRAMES)  
(46 TO 1500 BYTES)

CRC - CYCLE REDUNDANCY CHECK (4 BYTES)

## ETHERNET FRAME FORMAT

**FIG. 2**

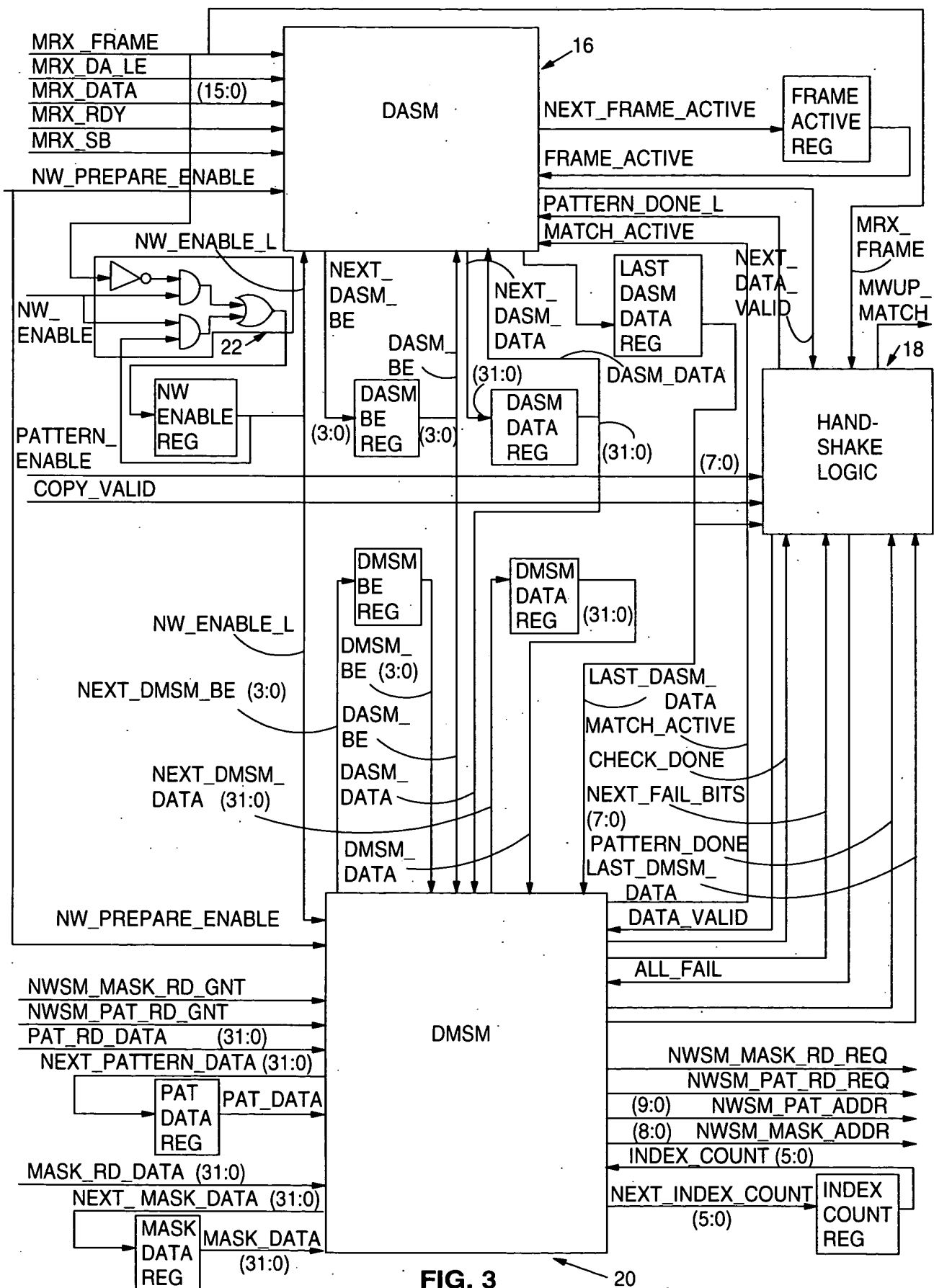


FIG. 3

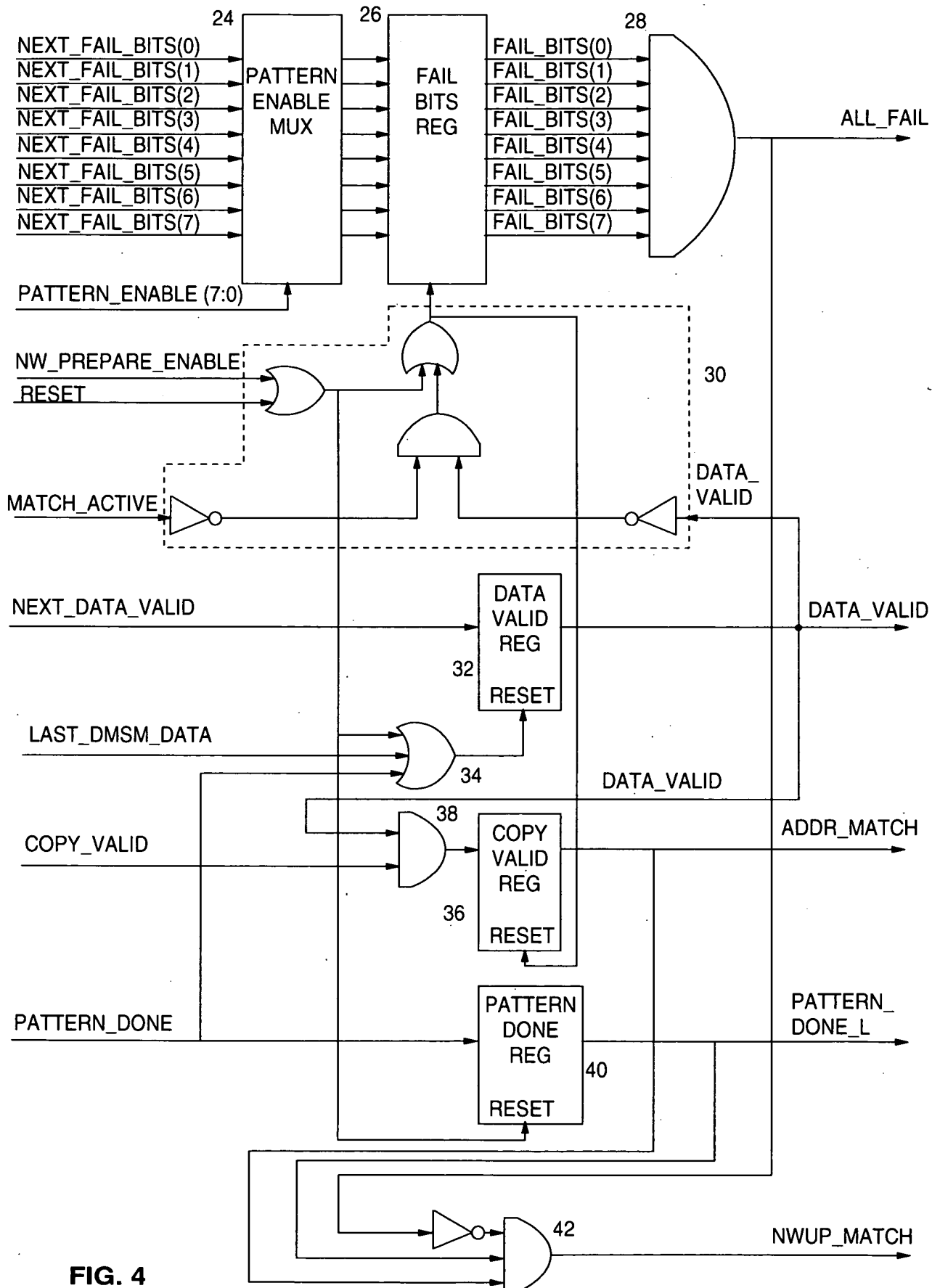




FIG. 4

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DMSM\_STATE(2:0) INDEX\_COUNT

**FIG. 5A**


  
DMSM\_STATE(2:0) INDEX\_COUNT

**FIG. 5B**

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STATE 0: IDLE/DATA31:16

IF PREPARE FOR ENABLE IS SET, OR ENABLE IS TURNED OFF

TURN OFF DATA\_VALID AND FRAME\_ACTIVE AND STAY IN STATE 0

IF FRAME FROM MEDIA ENDS (MRX\_FRAME IS DEASSERTED) AND FRAME\_ACTIVE FLAG IS SET

TURN OFF FRAME\_ACTIVE FLAG, MARK DATA AS LAST DATA TRANSFER TO DMSM (TURN ON LAST\_DASM\_DATA), AND STAY IN STATE 0

IF FRAME IS BEING RECEIVED (MRX\_FRAME IS ASSERTED), AND FRAME\_ACTIVE IS NOT SET (THIS MEANS THE FRAME IS JUST STARTING), AND DESTINATION ADDRESS LATCH ENABLE IS SET (MRX\_DA\_LE IS ASSERTED), AND MRX\_RDY IS SET (I.E. 16 BITS OF DATA IS BEING TRANSFERRED FROM THE MEDIA) AND MATCH\_ACTIVE = 0 (DMSM IS NOT CURRENTLY FINISHING MATCHING ON A PREVIOUS FRAME), AND MRX\_SB IS NOT ASSERTED (I.E. IT'S A FULL 2 BYTE TRANSFER)

SAVE DATA FROM MRX\_DATA IN DASM\_DATA(31:16), SET FRAME\_ACTIVE SIGNAL TO SHOW WE'RE RECEIVING A FRAME. SET DASM\_BE (VALID BYTES BIT MASK) TO '1100' AND GO TO STATE 1 TO GET BITS 15:0

IF FRAME IS BEING RECEIVED (MRX\_FRAME IS ASSERTED), AND FRAME\_ACTIVE IS NOT SET (THIS MEANS THE FRAME IS JUST STARTING), AND DESTINATION ADDRESS LATCH ENABLE IS SET (MRX\_DA\_LE IS ASSERTED), AND MRX\_RDY IS SET (I.E. 16 BITS OF DATA IS BEING TRANSFERRED FROM THE MEDIA) AND MATCH\_ACTIVE = 0 (DMSM IS NOT CURRENTLY FINISHING MATCHING ON A PREVIOUS FRAME), AND MRX\_SB IS ASSERTED (I.E. IT'S A 1 BYTE TRANSFER, WHICH CAN ONLY HAPPEN AT THE END OF A FRAME)

STATE 1: DATA15:0

IF PREPARE FOR ENABLE IS SET, OR ENABLE IS TURNED OFF

TURN OFF DATA\_VALID AND FRAME\_ACTIVE AND GO TO STATE 0

IF FRAME FROM MEDIA ENDS (MRX\_FRAME IS DEASSERTED) AND FRAME\_ACTIVE FLAG IS SET

TURN OFF FRAME\_ACTIVE FLAG, MARK DATA AS LAST DATA TRANSFER TO DMSM (TURN ON LAST\_DASM\_DATA), SET DATA\_VALID TO TELL DMSM TO PROCESS THE DATA IN DASM\_DATA, AND GO TO STATE 0

IF PATTERN\_DONE IS SET (I.E. DMSM HAS FINISHED CHECKING ALL PATTERNS)

GO TO STATE 0

IF FRAME IS BEING RECEIVED AND FRAME\_ACTIVE IS SET AND MRX\_RDY IS ASSERTED (16 BITS OF DATA IS BEING TRANSFERRED FROM THE MEDIA) AND MRX\_SB IS NOT ASSERTED (I.E. IT'S A FULL 2 BYTE TRANSFER)

FIG. 6A

FIG. 6A  
FIG. 6B

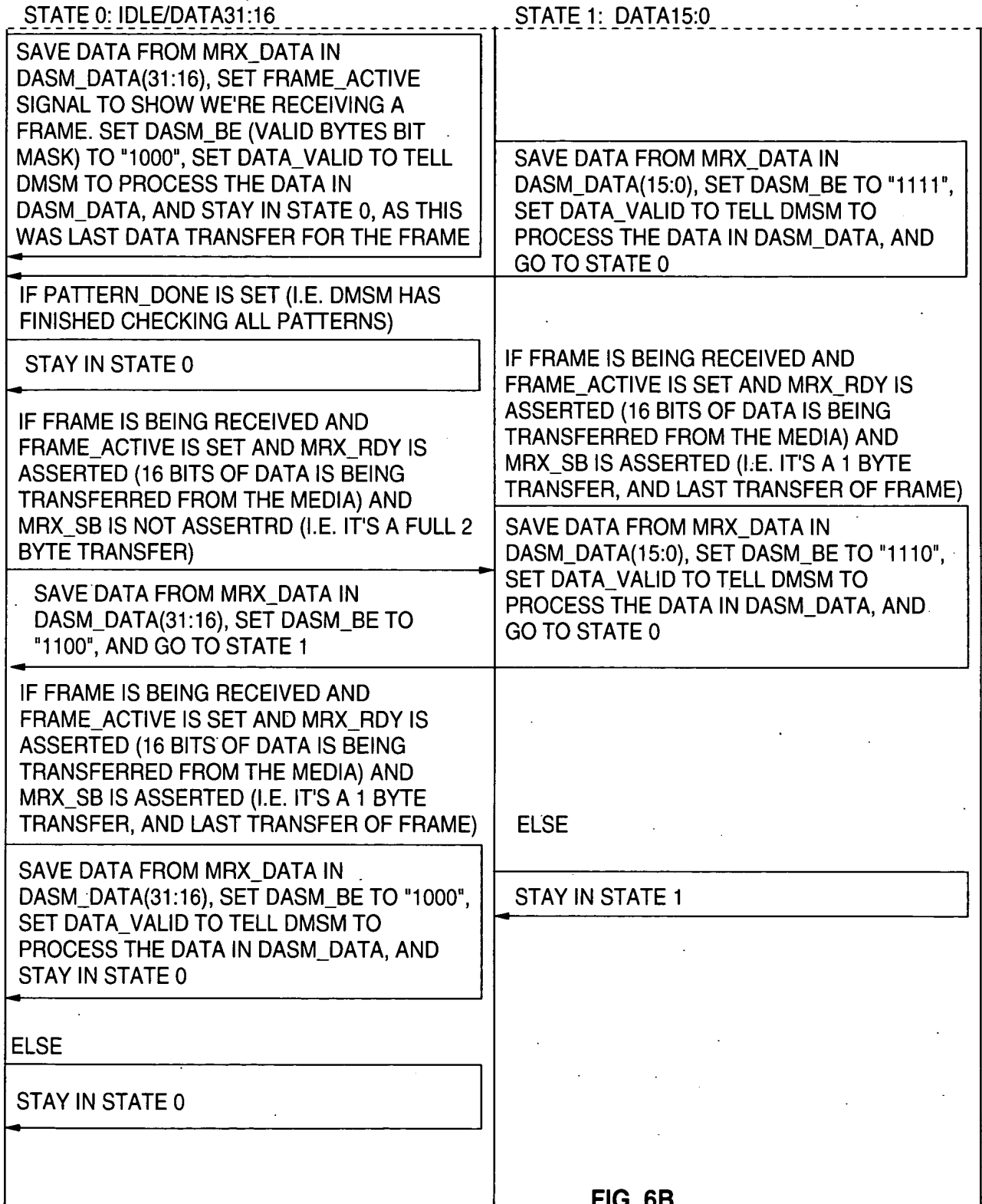


FIG. 6B

FIG. 6A  
FIG. 6B

# STATE 0: IDLE

IF PREPARE FOR ENABLE IS SET OR ENABLE IS TURNED OFF

STAY IN STATE 0

IF DATA FROM DMSM IS VALID (I.E. DATA\_VALID IS ASSERTED) AND ALL PATTERNS HAVE NOT FAILED (I.E. ALL\_FAIL IS NOT ASSERTED)

SET READ REQUESTS TO RAMS TO READ MASK AND PATTERN DATA. SET PATTERN ADDRESS TO "STATE & 00000" AND SET MASK ADDRESS TO INDEX COUNT. TRANSFER DATA FROM DASM\_DATA REGISTER TO DMSM\_DATA REGISTER. TRANSFER DATA VALID BITS FROM DASM\_BE TO DMSM\_BE. GO TO STATE 1 TO COMPARE PATTERN DATA AND MASK BITS FOR PATTERN 1.

ELSE

STAY IN STATE 0

FIG. 7A  
FIG. 7B  
FIG. 7C  
FIG. 7D

FIG. 7A

# STATES 1, 2, 3, 4, 5, 6, 7: PATTERNS 1-7

IF PREPARE FOR ENABLE IS SET OR ENABLE IS TURNED OFF

STAY IN STATE 0

ALWAYS: SEND MASK BITS FOR THE PATTERN BEING MATCHED TO LOGIC THAT IS DOING THE MATCHING I.E. WHILE IN STATE 1, SEND MASK BITS 3:0 TO MASK LOGIC; WHILE IN STATE 2, SEND MASK BITS 7:4; WHILE IN STATE 3, SEND MASK BITS 11:8, ETC.

IF ALL PATTERNS HAVE FAILED (ALL\_FAIL IS ASSERTED)

TURN ON PATTERN\_DONE FLAG TO TELL DASM THAT ALL MATCHING ACTIVITY IS COMPLETE FOR THIS FRAME, AND GO TO STATE 0.

IF ALL PATTERNS HAVE NOT FAILED (ALL\_FAIL IS NOT ASSERTED), THEN IF DATA\_VALID IS SET (DMSM HAS VALID DATA FROM DASM), AND THE CURRENT PATTERN'S DATA WORD DOES NOT MATCH THE DATA FROM THE MEDIA (I.E. THE DATA IN DMSM\_DATA) FOR BITS THAT ARE SET IN THE MASK FOR THIS PATTERN (I.E. THIS PATTERN HAS FAILED MATCHING)

# STATE 8: PATTERN 8

IF PREPARE FOR ENABLE IS SET OR ENABLE IS TURNED OFF

STAY IN STATE 0

ALWAYS: SEND MASK BITS FOR PATTERN 8 (MASK BITS 31:28) TO THE LOGIC THAT IS DOING THE MATCHING

IF ALL PATTERNS HAVE FAILED (ALL\_FAIL IS ASSERTED)

TURN ON PATTERN\_DONE FLAG TO TELL DASM THAT ALL MATCHING ACTIVITY IS COMPLETE FOR THIS FRAME, AND GO TO STATE 0.

IF ALL PATTERNS HAVE NOT FAILED (ALL\_FAIL IS NOT ASSERTED) THEN IF DATA\_VALID IS SET (DMSM HAS VALID DATA FROM DASM), AND PATTERN 8'S DATA WORD DOES NOT MATCH THE DATA FROM THE MEDIA (I.E. THE DATA IN DMSM\_DATA) FOR BITS THAT ARE SET IN THE MASK BITS 31:28 (I.E. PATTERN 8 HAS FAILED MATCHING) AND INDEX COUNT IS LESS THAN 32 (WE'VE NOT CHECKED ALL 128 BYTES OF THE PATTERN YET)



STATE 0: IDLE

STATES 1, 2, 3, 4, 5, 6, 7: PATTERNS 1-7

STATE 8: PATTERN 8

SET THE FAIL BIT FOR THE PATTERN NUMBER BEING CHECKED (STATE NUMBER - 1) READ THE PATTERN DATA FOR THE NEXT PATTERN (ADDRESS IS STATE (2:0) AND INDEX COUNT) AND ASSERT MATCH\_ACTIVE FLAG TO TELL DASM THAT MATCHING IS ACTIVE, AND TO GO TO NEXT SEQUENTIAL STATE (I.E. IF IN STATE 1, GO TO STATE 2...IF IN STATE 7, GO TO STATE 8). NOTE: IF IN STATE 7 INCREMENT INDEX COUNT BEFORE GOING TO STATE 8, ELSE, LEAVE IT AS IS.

SET FAIL BIT FOR PATTERN 8 (FAIL BIT 7) READ PATTERN DATA FOR PATTERN 1 (ADDRESS IS STATE (2:0) & UPDATED INDEX COUNT), READ NEXT MASK WORD (ADDRESS IS UPDATED INDEX COUNT), TRANSFER DATA FROM DASM\_DATA REGISTER TO DMSM\_DATA REGISTER. TRANSFER DATA VALID BITS FROM DASM\_BE TO DMSM\_BE. GO TO STATE 1 TO START CHECK OF ALL 8 PATTERNS ON THIS NEW WORD OF DATA FROM DASM. IF THIS IS LAST TRANSFER OF A FRAME (FRAME HAS ENDED BEFORE ALL 128 BYTES HAVE BEEN CHECKED), SET LAST TRANSFER FLAG.)

IF ALL PATTERNS HAVE NOT FAILED (ALL\_FAIL IS NOT ASSERTED), THEN IF DATA\_VALID IS SET (DMSM HAS VALID DATA FROM DASM), AND THE CURRENT PATTERN'S DATA WORD MATCHES THE DATA FROM THE MEDIA (I.E. THE DATA IN DMSM) FOR BITS THAT ARE SET IN THE MASK (I.E. THIS PATTERN HAS FAILED MATCHING)

IF ALL PATTERNS HAVE NOT FAILED (ALL\_FAIL IS NOT ASSERTED), THEN IF DATA\_VALID IS SET (DMSM HAS VALID DATA FROM DASM), AND PATTERN 8'S DATA WORD DOES NOT MATCH THE DATA FROM THE MEDIA (I.E. THE DATA IN DMSM\_DATA) FOR BITS THAT ARE SET IN THE MASK BITS 31:28 (I.E. PATTERN 8 HAS FAILED MATCHING) AND INDEX COUNT IS EQUAL TO 32

READ THE PATTERN DATA FOR THE NEXT PATTERN (ADDRESS IS STATE & INDEX COUNT) AND ASSERT MATCH\_ACTIVE FLAG TO TELL DASM THAT MATCHING IS ACTIVE, AND GO TO NEXT SEQUENTIAL STATE (I.E. IF IN STATE 1, GO TO STATE 2...IF IN STATE 7, GO TO STATE 8) NOTE: IF IN STATE 7, INCREMENT INDEX COUNT BEFORE GOING TO STATE 8, ELSE, LEAVE IT AS IS.

SET FAIL BIT FOR PATTERN 8 (FAIL BIT 7), SET PATTERN\_DONE FLAG TO TELL DASM THAT ALL PATTERN MATCHING IS COMPLETE, AND GO TO STATE 0 TO AWAIT DATA FROM NEXT FRAME.

FIG. 7A  
FIG. 7B  
FIG. 7C  
FIG. 7D

FIG. 7B

STATE 0: IDLE

STATES 1, 2, 3, 4, 5, 6, 7: PATTERNS 1-7

STATE 8: PATTERN 8

IF ALL PATTERNS HAVE NOT FAILED (ALL\_FAIL IS NOT ASSERTED), THEN IF DATA\_VALID IS NOT SET (FRAME HAS ENDED BEFORE DMSM HAS CHECKED ALL 128 BYTES OF ALL PATTERNS), DMSM MUST NOW MAKE SURE ALL MASK BITS ARE TURNED OFF FOR THIS PATTERN - IF ANY MASK BITS FOR THIS PATTERN ARE ON...

SET THE FAIL BIT FOR THE PATTERN NUMBER BEING CHECKED (STATE NUMBER - 1), AND GO TO NEXT SEQUENTIAL STATE. IT IS NO LONGER NECESSARY TO READ PATTERN DATA FROM THE PATTERN RAM. NOTE: IF IN STATE 7 INCREMENT INDEX COUNT BEFORE GOING TO STATE 8, ELSE LEAVE IT AS IS.

IF ALL PATTERNS HAVE NOT FAILED (ALL\_FAIL IS NOT ASSERTED) THEN IF DATA\_VALID IS SET (DMSM HAS VALID DATA FROM DASM), AND PATTERN 8'S DATA WORD DOES MATCH THE DATA FROM THE MEDIA (I.E. THE DATA IN DMSM\_DATA) FOR BITS THAT ARE SET IN THE MASK BITS 31:28 (I.E. PATTERN 8 HAS FAILED MATCHING) AND INDEX COUNT IS EQUAL TO 32

SET PATTERN\_DONE FLAG TO TELL DASM THAT ALL PATTERN MATCHING IS COMPLETE, AND GO TO STATE 0 TO AWAIT DATA FROM NEXT FRAME.

IF ALL PATTERNS HAVE NOT FAILED (ALL\_FAIL IS NOT ASSERTED) THEN IF DATA\_VALID IS SET (DMSM HAS VALID DATA FROM DASM), AND PATTERN 8'S DATA WORD DOES NOT MATCH THE DATA FROM THE MEDIA (I.E. THE DATA IN DMSM\_DATA) FOR BITS THAT ARE SET IN THE MASK BITS 31:28 (I.E. PATTERN 8 HAS FAILED MATCHING) AND INDEX COUNT IS LESS THAN 32 (WE'VE NOT CHECKED ALL 128 BYTES OF THE PATTERN YET)

FIG. 7A  
FIG. 7B  
FIG. 7C  
FIG. 7D

STATE 0: IDLE

STATES 1, 2, 3, 4, 5, 6, 7: PATTERNS 1-7

STATE 8: PATTERN 8

<p>READ PATTERN DATA FOR PATTERN 1 (ADDRESS IS STATE(2:0) &amp; UPDATED INDEX COUNT) READ NEXT MASK WORD (ADDRESS IS UPDATED INDEX COUNT), TRANSFER DATA FROM DASM_DATA REGISTER TO DMSM_DATA REGISTER. TRANSFER DATA VALID BITS FROM DASM_BE TO DMSM_BE. GO TO STATE 1 TO START CHECK OF ALL 8 PATTERNS ON THIS NEW WORD OF DATA FROM DASM. IF THIS IS LAST TRANSFER OF A FRAME (FRAME HAS ENDED BEFORE ALL 128 BYTES HAVE BEEN CHECKED), SET LAST TRANSFER FLAG).</p>	
<p>IF ALL PATTERNS HAVE NOT FAILED (ALL_FAIL IS NOT ASSERTED), THEN IF DATA_VALID IS NOT SET (FRAME HAS ENDED BEFORE DMSM HAS CHECKED ALL 128 BYTES OF ALL PATTERNS), DMSM MUST NOW MAKE SURE ALL MASK BITS FOR PATTERN 8 (BITS 31:28) ARE TURNED OFF. IF ANY OF THESE BITS ARE ON...</p>	
<p>SET THE FAIL BIT FOR THE PATTERN 8 IF INDEX COUNT IS LESS THAN 32, READ NEXT WORD OF MASK (ADDRESS IS UPDATED INDEX COUNT) AND GO TO STATE 1</p>	
<p>IF INDEX COUNT IS EQUAL TO 32, SET PATTERN_DONE AND GO TO STATE 0</p>	

FIG. 7A  
FIG. 7B  
FIG. 7C  
FIG. 7D

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PATTERN NUMBER	PATTERN RAM LOCATION (BYTE ADDRESS)	PATTERN RAM LOCATION (WORD ADDRESS)
1	000-07F	000-01F
2	080-0FF	020-03F
3	100-17F	040-05F
4	180-1FF	060-07F
5	200-27F	080-09F
6	280-2FF	0A0-0BF
7	300-37F	0C0-0DF
8	380-3FF	0E0-0FF

**FIG. 8**

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BITS

31	28	27	24	23	20	19	16	15	12	11	8	7	4	3	0
MASK FOR PATTERN 8 WORD 1		MASK FOR PATTERN 7 WORD 1		MASK FOR PATTERN 6 WORD 1		MASK FOR PATTERN 5 WORD 1		MASK FOR PATTERN 4 WORD 1		MASK FOR PATTERN 3 WORD 1		MASK FOR PATTERN 2 WORD 1		MASK FOR PATTERN 1 WORD 1	

FIG. 9